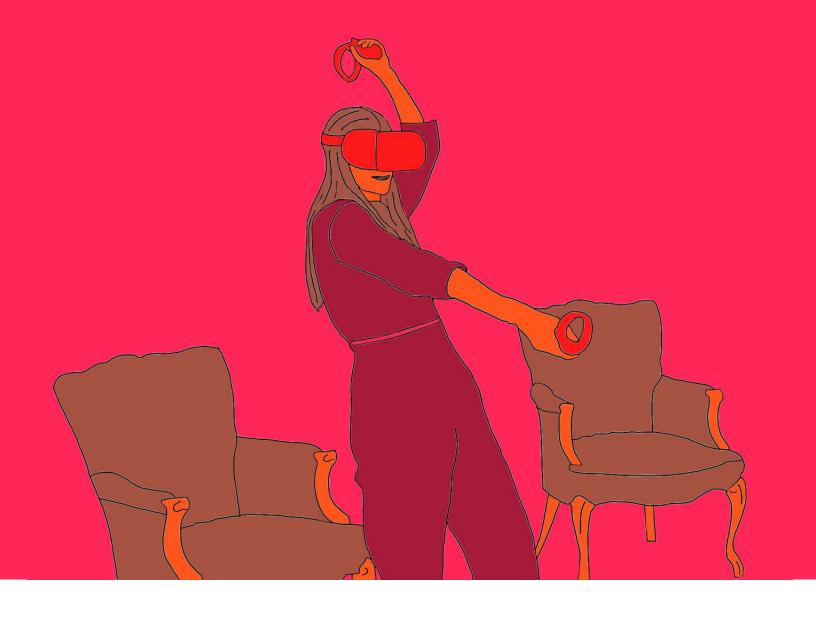French Immersion and Kaleidoscope present

FR//XR
A Handbook For Immersive Producers

How to successfully finance, produce and distribute immersive content

FRENCH IMMERSION

CULTURAL SERVICES
FRENCH EMBASSY
IN THE UNITED STATES

UNIFRANCE

INSTITUT
FRANÇAIS

CNC

FACE
FOUNDATION

Preface

By French Immersion

Immersive technologies, and VR in particular, offer a possibility of creating unique digital experiences, from narrative and interactive stories, to blockbuster games and exceptional social events. Immersive producers are forced to navigate in a challenging environment: there is not one production or distribution model for immersive experiences, as virtual creation lies at the crossroads between film, gaming, visual arts and performing arts. There is no mass XR market yet. The pandemic of COVID-19 has changed the way we access culture and media, and shacked the emerging immersive industry.

For decades France has been a great supporter of talented digital creators and producers as shown by the representation of French virtual productions at major international festivals. However, with a concentration of technology companies, online platforms, LBE and museums, it is the U.S. market that is key for producers who wish to expand and find new business opportunities.

To help navigate in this global ecosystem and strengthen their support to producers, the partners of French Immersion are happy to present "FR//XR: A Handbook For Immersive Producers". French Immersion is a program aiming to increase the export of French immersive experiences to the United States. Launched in 2018, French Immersion was created by the Cultural Services of the French

Embassy, in partnership with UniFrance, the Institut français, the CNC - Centre National du Cinéma et de l'Image Animée (the national film board of France), and FACE Foundation. The program accompanies the yearly selection of French projects presented in festivals and cultural institutions in the United States. As the XR industry evolves, and COVID-19 accelerates our digital practices, in 2020 French Immersion launched two new initiatives: 15 grants to support online promotion of immersive experiences and the FR//XR project. FR//XR was a series of online gatherings, surveys and a research study to determine how best to fund, produce and distribute VR/AR experiences in this new reality. The partners of French Immersion have entrusted Kaleidoscope to lead on the project.

We sincerely want to thank all American and French professionals who took part in this ambitious project, especially our event guests and experts interviewed for this study. We are truly grateful for the work done by Ana Brzezińska and René Pinnell from Kaleidoscope. We do believe this report is a unique source of information from top voices of the industry, not only to empower the creative community to push immersive production forward but also to understand the future of cultural experiences and practices - IRL and online.

About This Handbook

The study has been written by Ana Brzezińska from Kaleidoscope in collaboration with Emma Buttin, VR, TV & New Media Officer at the Cultural Services of the French Embassy in the U.S. Over the course of a year-long research our team collaborated with XR industry leaders and professionals, who generously shared their knowledge and experience with us. We conducted 12 in-depth interviews, ran 2 community surveys receiving over 500 responses, and co-hosted 7 online events where we spoke with more than 25 XR professionals (see: Appendix). We want to thank everyone who contributed to this project, and shared their time with us.

XR Experts Interviewed

Antoine Cayrol
Co-founder and CEO
Atlas V

Maria Rakusanova
Viveport Europe Lead
HTC Vive

Jimmy Cheng
Director of Content at Digital
Domain

René Pinnell
CEO and Designer
Kaleidoscope

Loren Hammonds
Senior Programmer
Tribeca Film Festival

Joanna Popper
Global Head of VR for
Go-To-Market & LBE
Hewlett-Packard

Chloé Jarry
CEO
Lucid Realities

Marc Petit
General Manager at Unreal Engine
Epic Games

Eric J. Krueger
VP of Development & Production
AmazeVR

Amy Zimmerman
Program Manager & Co-Founder
Unity for Humanity Program
Unity

Jason Waskey
Director of Microsoft Mixed Reality
Capture Studio, Microsoft

Gregoire Moisson
CEO
Wild Immersion

Introduction

France and USA: Different Ecosystems, Same Challenges

From an external perspective, French and American cultural immersive markets can seem like two entirely different planets. The existence of public funding and a strong cultural agenda in France, as well as systemic support for innovation, has been a foundation of a thriving digital community that many countries can only dream of. Even in Western Europe there are very few examples of similarly developed ecosystems that put so much attention to supporting innovation in art, culture and cultural heritage, as well as investing in research and education [1].

At the same time, the number of successful French companies and startups is still relatively low compared to the United States, or the United Kingdom. From a cultural perspective, the network of A class festivals and recognizable events that host extended reality art is still less developed than in the US, a country that offers no regular state or federal support to independent creation. From a business perspective, global tech giants still choose to sit in London, rather than in Paris,

and so many meaningful partnerships between French studios and American entrepreneurs or commercial players still need external facilitation [2].

STUDY GOALS AND CONTEXT

The immersive ecosystem is still young, and sustainable business models for XR production are only being created. By writing this report we wanted to find out what are the opportunities and challenges of building a successful collaboration between the French and the American XR market with focus on art and entertainment. We aimed at inspiring immersive producers and developers how to fund and distribute their content in different ways, reaching out to new partners and introducing new strategies.

If "virtual reality" or "VR" was the wording most commonly used a few years ago, "extended reality" or "XR" is now preferred as it includes VR, augmented reality (AR) and mixed reality (MR), as well as other immersive technologies still to be created [3].

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[1] Thanks to early adoption and strategic investments, France has been one of the frontrunners of the European XR ecosystem both in terms of immersive independent creation but also research for a number of years. See: VR and its potential for Europe, 4.2 Europe's main VR & AR countries in detail.

[2] All this should be taken in proportion to the growing numbers in Emmanuel Macron's France when it comes to establishing successful tech companies. France may indeed run behind the UK, but remains ahead of Germany, Sweden and other EU states, and expresses a clear ambition of becoming a European leader. See: Financial Times, POLITICO.

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France and USA: Different Ecosystems, Same Challenges

This study focuses on virtual experiences as VR hardware plays an important role in immersive content distribution. Moreover, immersive and interactive experiences are created with a wide range of technologies that overlap and are often at the crossroads between sectors (technology, film, animation, gaming, visual and performing arts).

The story behind this project is similar to many 2020 endeavours - we started to work on it before the COVID-19 pandemic hit, and we quickly realised the need to include in our perspective a number of new circumstances. We found out that many of the recommendations and models that seemed valid in January 2020 lost their reliability in early Spring. Even if some of the business mechanisms get restored once the COVID-19 vaccine is widely available, we still need to be aware that our young funding and distribution models might never look the same.

This is especially true from the American perspective, for reasons already mentioned.

With no access to public support, many impactful companies and organizations that shaped the XR market, like Vulcan, Tribeca Institute or Intel Studios closed or declared bankruptcy. Some of the artistic powerhouses, like Sundance Film Institute, suffer from budget shortages and openly seek financial support within their communities. Location based entertainment (LBE) is at threat of shutting down venues, or changing their business models (like Dreamscape Immersive that decided to step onto the education market [4]). Creators and independent developers lost sources of income, and needed to rethink their plans or put their work on hold [5].

In the meantime, France declared an increased support for the creative industries and announced a set of re-framed, adjusted to needs funding schemes for artistic and digital creation and their international promotion [6]. The French government decided not to leave arts and culture without support, especially seeing what kind of threat has been coming. According to a 2020 OECD report [7], the European cultural

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[3] Extended reality (XR) is a term referring to all real-and-virtual combined environments and human-machine interactions generated by computer technology and wearables, where the 'X' represents a variable for any current or future spatial computing technologies, e.g. It includes representative forms such as augmented reality (AR), mixed reality (MR) and virtual reality (VR) and the areas interpolated among them.
[4] 'Dreamscape Learn' to transform educational experience through exploration
[5] Kaleidoscope's Industry Survey, June 2020. Between April and October 2020 we run two online surveys within the Kaleidoscope community collecting over 500 answers to questions about the impact of COVID-19 on independent creators as well as immersive content distribution strategies. All answers were collected anonymously using Google Forms.

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market is going to see severe losses, and the only industry that will continue to develop is, unsurprisingly, gaming.

FRATERNITÉ - HOW TO INCUBATE A SHARED SUCCESS TOGETHER

Our report sits between eras: a pre-COVID and a post-COVID time. We hope that most of the recommendations, foresights and opinions we collected in 2020 will make our readers confident that whatever the future holds, there are extensive collaboration opportunities, and new business paths to be discovered together.

French creators, developers and producers have been notorious for introducing some of the most engaging and successful immersive stories. American tech companies, platforms, festivals and distributors have been at the heart of digital acceleration and XR evangelization. Combining the power of these two bloodstreams can bring outstanding results,

no matter the short-term circumstances:

"French creators could team up with American game studios. Of all the VR experiences I get the most emotional and most touched by are created by French creators. There is a secret source that these creators have. The French people have it the most, they consider how you feel. They design something for emotions. How they will make you feel in the experience. And that is so important in VR, and I think the French have a sort of 'je ne sais quoi' kind of advantage by just them being who they are." says Maria Rakusanova, Viveport Europe Lead at HTC Vive.

FORSEEING THE FUTURE OF IMMERSIVE MEDIA

With the rise of 5G [8] and a growing accessibility of both XR hardware and content we can expect dynamic changes in at-home entertainment, enterprise and education [9].

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[6] See: Plan de relance des filières du cinéma et de l'audiovisuel, décembre 2020 - CNC and Un soutien exceptionnel en faveur de la création artistique, octobre 2020 - Ministère de la culture

[7] Source: Culture shock: COVID-19 and the cultural and creative sectors

[8] "Both Vinay Narayan from HTC Vive and Ted Schilowitz from Paramount believe that connecting XR devices to the mobile internet and moving functions over to cloud computing could make major differences to the tech and its adoption. "I think one of the biggest technologies that is really needed to get these headsets further in both AR and VR is 5G," says Narayan. "One of the biggest challenges to getting a VR headset smaller … is the ability to compute and power. By moving a lot of these technologies onto the edge, you're able to kind of shrink those platforms down [and] reduce the cost of entry." XR Industry Report 2019, Reuters Events.

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France and USA: Different Ecosystems, Same Challenges

Experts we spoke with highlighted some of the most important tendencies based on their experiences, as well as an inside analysis of the market. We encourage you to take a look at what we've learned from them, and try to foresee the future of the immersive market thinking how to best use this knowledge in your own professional development.

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[9] "For Stephanie Llamas, Vice President of Strategy & Head of XR at SuperData, "VR adoption is going to hinder on three things." Firstly, "It's going to be content. So, [for example] Beat Saber has done wonders for getting people excited about VR, and people who experience it, who are new to VR, it's a really great first experience. As we see more experiences like that, that's really helpful, so we need to see a lot more. And then the second being price of headsets. That's been prohibitive for a lot of people, especially with setups that are expensive as well – having to buy PCs, or consoles or so on. And that leads to the third one, which is standalone. It needs to be untethered and it needs to be something you can throw on quickly and take off quickly, you know, have a five-minute session, or a 60-minute session. Until you have those three things, you're facing a lot of barriers to entry." Ibidem

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All industry leaders we spoke with agree - **in 2020 we witnessed an unprecedented acceleration of all things digital**. Media consumption surged during the first lockdown [10] and the interest in immersive products, whether it's hardware or software, was growing faster than expected.

According to PwC [11], the U.S. VR/AR market is the biggest single market followed by China, Japan, Germany, UK and France. There was an expected short-term decline in VR headset sales in 2020 caused by supply chain disruptions, but the estimated growth in head-mounted display (HMD) sales in the coming months should be significant, especially that in 2020 companies like HP and Facebook released new headsets, including Oculus Quest 2 - an affordable wireless device for mass user.

The B2C American VR market is led by gamers (over 50 percent [12] of use cases). In 2020, Steam ran a hardware study [13] according to which only 1.3 percent of their players owned a VR headset (HTC Vive and Oculus Rift being the most popular devices). This shows that although gamers dominate among VR users, the number of headset owners is still very low. This fact is reflected in another important observation. Although games are very popular among American VR users, and American gamers are the most active group on Steam, there is no single VR title on the current list of 100 most popular games on Steam [14]. The only VR application that got to the chart of most wanted Steam products was VRChat, a social VR platform with a number of over 10 million users in October 2020 (and an all-time peak in July 2020 of over 28 million users [15]). The popularity of the platform grew as socially distanced VR goers tried to find a way to meet with friends or find an immersive alternative for 2D entertainment.

As XR becomes increasingly popular in B2B relations, tech companies focus on business and enterprise. Magic Leap, a MR company, switched from B2C to B2B model, Facebook launched a new offer called Oculus for Business, and HTC Vive developed a separate offer for companies and corporate clients.

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[10] Source: In the United States media consumption on mobile devices was 215% higher in March 2020 than in March 2019
[11] Source: PwC "Seeing Is believing" report, 2019
[12] Source: United States Virtual Reality Use Case
[13] Source: Steam Hardware & Software Survey: December 2020
[14] Source: Steam and Game Stats
[15] Source: Steam Charts

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THERE IS WORLD OUTSIDE GAMES

What was particularly interesting in 2020, was **the realisation that virtual reality is more than just another medium for gaming**. Both business and individual consumers noticed other use cases of immersive technology, and decided to give it a try. This change has been foreseen already in 2019. According to a VRX report by Reuters [16], "the leading sector that XR-supporting companies intend to work with is the Education sector, with 55.8% saying they expect to provide services to it. The next highest categories were AEC (Architecture/Engineering/Construction; 44.2%), Healthcare (42.3%), Manufacturing (39.6%) and Automotive (36%). Gaming is now viewed with far less interest by companies working to provide XR technology compared to 2018's results. In that year's survey, 50% of respondents said that they intended to work within the gaming industry over the next 12 months, but this had fallen to just a third of respondents from the supply side of XR in the 2019 results."

We could therefore think that this trend has not been a consequence of the COVID-19 pandemic.

Marc Petit, General Manager at Unreal Engine, says there are at least two reasons behind a growing popularity of immersive media in non-gaming sectors: "It's more fun to do XR in 2020 than it was in 2017 because we're much less living in the tyranny of the hardware limitations. The hardware you deliver the content on is not what matters. What matters is content. XR is finally pivoting from having the tail wave the dog which was always about a headset. **We need to create experiences that work across all devices. XR is not just headsets, it's immersive content.** Using buildings, projecting content on walls, transfer screens… There are all kinds of ways we can create a sense of immersion using interactive content. And the big thing in which we strongly believe in is that the ultimate freedom will come from cloud streaming. We want to show photorealistic AR/MR, and I think that's the promise of a high latency network like 5G. We have CloudXR from NVIDIA that's going to be an enabler for wireless headsets, and cloud distribution. Finally the tools are starting to converge."

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[16] Source: XR Industry Report 2019, Reuters Events

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AT-HOME IS THE NEW OUT-OF-HOME

We shouldn't, however, underestimate the impact of the pandemic on technologies that can affect the acceleration and quality of XR adoption. In 2020 GAFA (Google, Apple, Facebook, Amazon) and Snap, companies that have a major say on digital industries, all saw a significant profit increase [17]. The reason is simple: everything that used to be an out-of-home experience, whether it's entertainment, shopping, travel or workout, needed to be adapted to an online or remote mode. "The multiuser out-of-home experiences seemed to be driving the industry, and with all of us locked at home we've seen increased interest on the consumer side for at home use. Steam VR is all-time high, and headsets are completely sold out. Pre-orders of HP Reverb 2 are much higher than expected" says Joanna Popper, HP Global Head of Virtual Reality for Go-To-Market and LBE. The changes happen not only on the consumer market, but mainly - as already stated - within education and enterprise. "**We see more universities being interested in how they get VR into students' hands, enterprise training, armed forces training**, so we're seeing more and more

interest in different areas." adds Joanna Popper. As Loren Hammonds, Senior Programmer of Feature Films and Immersive at Tribeca Film Festival says, "**a lot of people look for co-creation tools and collaboration tools in XR**, if you feel like you're in a room with someone and you can hand them a tool to work on something with you."

Different sectors discovered the promise of XR, notices Amy Zimmerman, Program Manager and Co-Founder of the Unity for Humanity Program at Unity: "Real time 3D content that is made with Unity has become more widely adopted by automotive, retail, manufacturing, and more, but in my line of work, on the Social Impact side of the business, I see NGOs that previously had no idea about this type of creation start to embrace it. **We see charities looking to create VR experiences not only to inspire communities to create change for the better, but also as a medium to obtain funding** - actually using VR pieces to fundraise. I saw healthcare companies pivot almost overnight to provide training for doctors using ventilators. One company instantaneously deployed a VR training tool to more than 100 hospitals. That's something we have never seen before."

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[17] Source: Big Tech Continues Its Surge Ahead of the Rest of the Economy

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During the lockdown period Unreal Engine worked with 44 audiovisual teams who switched from 2D cinematic production to virtual production: "People were not much aware of the multi user capabilities of Unreal, that you and I could be working on the same scene as we speak. You could create content not being in the same room, and the film process demands being in the same room. We created a task force to support the migration from the old pipeline to the new one, for animation projects that otherwise wouldn't scale. We decided to fly the location to the talent instead of flying the talent to the location. **Today you can do movies from home**." says Marc Petit (Unreal Engine).

SOCIAL VR AND VIRTUAL EVENTS

In terms of cultural events and gatherings, examples of successful shows like Travis Scott and DJ Diplo in Fortnite [18], the Weeknd Experience by Wave VR [19], a first-ever virtual edition of the Burning Man 20, HBO & Janelle Monae Lovecraft music event [21], or the Billie Eilish & Moment Factory concert collaboration [22], as well as virtual fashion shows (Balenciaga [23], GCDS [24]), have shown a continuously expanding scope of what's possible in virtual and online environments in terms of new social and artistic experiences. **A successful combination of VR, webXR, online distribution, gaming, and smart social media use**, seems to be the best way of reaching out to different audiences, and promoting new ways of interactive and immersive event design [25].

Also, a large number of virtual festivals of film and immersive art, including a +50 pieces VR exhibition at Cannes XR created in collaboration with Tribeca Film Festival [26], is a clear sign that the industry is ready to adapt to

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[18] Source: Fortnite Hosts Yet Another Concert Featuring DJ Diplo In His Major Lazer Set
[19] Source: The Weekend Experience
[20] Source: Burning Man in the Multiverse
[21] Source: Sanctum VR
[22] Source: Billie Eilish Livestream
[23] Source: 5 Things To Know About Balenciaga's Virtual Reality AW21 Show
[24] Source: GCDS Had the Most Surreal Front Row at Its Virtual Fashion Show
[25] "The Fabric of Reality" a virtual fashion show produced by RYOT/Verizon Media, and co-produced by Kaleidoscope and the Museum of Other Realities, has used both VR, AR and online channels, gathering over 7 million desktop users (with over 30 million video highlights), thousands and hundreds of AR and VR users. With limited access to hardware and early-stage webAR solutions, a multiplatform approach seems the best way to make the content widely available and re-use the franchise on different platforms.
[26] Source: 55 XR works presented at Cannes XR Virtual

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a challenging situation, learn from one another, and quickly create new skills and competencies without external support or agency.

When asked if virtual solutions for events are to become permanent, most industry leaders answer yes. "The genie is out of the bottle, and it's not going back in. **Virtual events are here to stay.**" Amy Zimmerman (Unity) is confident. "Not only for environmental reasons, but also for huge cost savings."

CHANGES? YES, BUT NO

A fair amount of solidarity that we have seen in 2020, whether it's festivals' coalitions like We Are One [27] or a smooth collaboration between platforms can also be interpreted as a sign of readiness for reviewing old distribution models based on exclusivity, and a delicate push for developers to create different content versions. "For now it's important to embrace the online aspect. This does bring challenges to distribution, because a lot of distribution relies on exclusivity, and if you have already given away the piece, you can't make money off it after that. People try to showcase work without giving it away, with platforms like the Museum of Other Realities or temporary exhibitions

that we're seeing at Viveport or Oculus." says Loren Hammonds (Tribeca). Maria Rakusanova (Viveport) replies: "When it comes to distribution we're not very much about exclusivity. Typically it's like a month. But we check what is the lifetime of the experience. Can you add new downloadable content, new updates, levels, game modes, that the IP has a sort of longevity? **Little touches that keep your experience fresh.**"

The above statement is relevant to experiences and games, which can be accessed via online or virtual platform. However, Loren Hammonds foresees a change in the type of content that will become popular in the coming months: "**In the near future we may see more focus on AR and mixed reality**, experiences that are less touchy-feely, so that you can use your own device to experience the work. There is a conscious effort on my part as a curator to look at AR experiences that can be spread out and shared publicly. We're also interested in new forms of work that are able to be geolocated elsewhere and not in an indoor room".

Eric J. Krueger, VP of Development and Production at AmazeVR, who planned to

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[27] Source: We Are One

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expand to offline distribution before COVID-19, sees this as a temporary change: "**It's online in the short term, and offline in the long term**. It really just comes down to what timeline we're talking about."

CREATORS' PERSPECTIVE

How creators and independent studios reacted to the 2020 lockdown? From two surveys run by Kaleidoscope in 2020 [28] we learned that:

1. Creators reported both losing and gaining audiences (50/50%)
2. Creators and studios reported increased interest in moving to online platforms (55%), as well as reaching out to partners and clients from different sectors (54%)
3. Creators and studios increased their search for new partners and investors (33,5%).

Survey respondents explained that the major negative sign for VR is the regression and slower growth in OOH (out of home) distribution opportunities but in the long term, they also foresee some positive trends:

- **Social XR**: The crisis will have a positive impact on VR, as it helps people to connect. At home distribution, online events will grow.
- **AR & WebXR**: Accessible mobile AR experiences and web-based AR will become more popular.
- **Professional use**: VR success requires mass ownership of headsets. In the short term, institutional and educational adoption will pave the way. Virtual film production and VR training will gain importance.

We asked representatives of the French immersive industry about the impact of the pandemic on the XR market, as well as their reactions to the crisis. Antoine Cayrol, co-founder and CEO of Atlas V, says: "For our industry the worst [in 2020] is behind us. For many other industries the worst is still to come. In the long term perspective, Atlas V wants to be the first immersive group that will be the one-stop shop of VR. **We want to finance, create, produce and distribute.** Our strategy is to diversify. We want to develop our own IP.

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[28] Source: Kaleidoscope's Industry Survey, June 2020.

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We did "Gloomy Eyes" in VR. It worked really well, so now we're making a feature film and a video game. We want to do more classic formats but with real time engines, ex. an animated TV series using Unreal Engine."

Gregoire Moisson, CEO of Wild Immersion, says: "We are a location based company, and usually we are distributing our VR/360 content on headsets in public places like theme parks, aquariums or museums. Before COVID-19 we had 7 locations opened in Europe, and we were supposed to open 8 new international venues (Africa, Middle East, United States). **Part of our COVID-19 strategy has been to create multiple models for online distribution**: the first one is partnering with VR native platforms and telecom companies. Second way is to broadcast the content by ourselves, so we have created a platform with a video player that you can use with a smartphone or a tablet. Finally, we created new formats and used other technologies as AR or mobile apps."

Thanks to the support from public agendas and private companies, small studios and independent developers received a chance to

continue their work, and gained time to rethink their strategies. However, with or without the pandemic challenges, the problem of making independent XR creation sustainable remains valid. Colum Slevin, Director of AR/VR at Facebook Reality Labs, foresees that this only will change when XR hits the mainstream: "**The path to sustainability for professional creators needs to be preceded by scale**. The only way there is going to be a sustainable ecosystem where creators can eventually be profitable making this type of content, is if there are enough users out there, and the only way there is going to be enough users out there, is if the users are actually able to create too." [29]

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[29] FR//XR Industry Panel, "XR: A brighter future of media and entertainment?", New Images Festival 2020, Paris

Chapter 2

Virtual Reality (VR) Business Models in the USA

FUNDING

As mentioned earlier, in the United States there is no available state of federal funding that could be an equivalent of French public funds for XR creators, developers and producers. The funding model relies on private equity and sponsorship deals with companies and partners who have a strategic or financial reason to invest in specific types of content. The only exceptions from this rule are projects developed in collaboration with research centers and academia (MIT, Stanford, Johns Hopkins, NYU...), or with NGO, institutions and organizations that act for a cause or within a community (United Nations, UNICEF, Sundance New Frontier, Chicken and Egg...).

Broadcasters, like PBS-POV, occasionally support projects with a mass audience potential or a clear message that fits well the network's programming line. But even these singular projects need to secure their core funding on the private market, as most of the above mentioned contributors provide a small to moderate financial support, and the opportunities are highly competitive.

One way of securing a part of the budget is **partnering with a telecommunications company.** Telecoms provide small amounts of money to support immersive productions, and look for content that ranges from entertainment, animation, travel, music and horror VR experiences to AR family-friendly apps. "Most of the telecoms invest in VR production but the amount that they invest is between 5K and 20K Euro. They mainly invest in local studios: Deutsche Telecom invested in "First Step", Orange invested in multiple [French] projects. Studios which are looking for telcos to invest in their content should approach the local telecom directly or have a really good middle man try to pitch their project to international telecoms." explains Jimmy Cheng, Director of Content at Digital Domain. What is interesting to note is the ability of telecom companies and studios to join forces at an international level: announced in September 2020, the Global XR Content Telco Alliance groups LG Uplus, Canada's Bell, Japan's KDDI, China Telecom, US's Qualcomm and content makers Felix & Paul Studios and Atlas V.

Independent immersive industry depends a lot on **financial support from technological companies**, who invest in XR creation to maintain the adoption speed, and to boost or advertise their products.

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Virtual Reality (VR) Business Models in the USA

"In the gaming market in XR co-financing is happening from the major players whether it's Oculus or HTC Vive. There putting up more in terms of production dollars creating these experiences and also acquiring studios that are making experiences that are impactful." explains Loren Hammonds (Tribeca).

Currently, the biggest player on the market is **Facebook**, **owner of Oculus and creator of a number of extended reality tools and initiatives** (Facebook Horizon, project Aria, Facebook Reality Labs). What has turned out to be a game changer is Oculus Quest, Facebook's first wireless HMD. The first generation was released in May 2019 and the Quest 2 in October 2020 at a price of only 299 USD. "Facebook has a 39% share of the virtual-reality hardware market, making it the industry's largest player, according to data from market intelligence firm International Data Corporation. Smaller players include Lenovo Group Ltd., Sony Corp. and HTC Corp., while Apple is developing its own mixed virtual and augmented reality headset for launch as early as 2022." [30]

The fact that Facebook is not only an affordable headset provider, but also owns a major VR distribution platform (Oculus Store), offers applications for creating immersive content (Quill), develops the biggest up-to-date virtual reality social network (Facebook Horizon [31]), and an augmented reality project that aims at creating a company-owned metaverse (project Aria [32]) makes the Silicon Valley giant the most powerful XR player in the world. Just like many companies involved in immersive technologies Facebook invests in original content (in the past via Oculus Studio and Oculus For Good program, today via Facebook Reality Labs [33]).

In general, original content production investment from sponsors ranges between $50,000 and $800,000, depending on the production. Although there are many ways of successfully pitching your concept to XR decision makers, there is no blueprint for getting funded. "Most of the investment we make is games - because of our audience. The vast majority of our audience is here for games.

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[30] Source: Bloomberg Technology - December 2020
[31] Source: Will Facebook Horizon be the first step toward the metaverse?
[32] Source: The Race to Map Reality so Silicon Valley Can Augment It Is On
[33] Source: Creating the future of personal and shared reality

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Virtual Reality (VR) Business Models in the USA

However, we invest also in non-gaming content because we want to support it. When it comes to percentage, games are about 95 percent." says Maria Rakusanova (Viveport).

Creators and developers collaborating with museums and galleries can get funded by Vive Arts [34], a separate unit at HTC dedicated solely to art and art-related high-end experiences (past projects produced by French studios and supported by Vive Arts include "The Mona Lisa VR" experience created with Musée du Louvre, "The Water Lily Obsession" created with Musée de l'Orangerie, La Geode created with Museum of Science and Industries and "Journey into the Heart of Evolution" created with Musée d'Histoire Naturelle). Some museums commission new media art (The Whitney Museum). The Phi Centre in Canada invests in French XR experiences [35]. Artistic residency and incubator programs welcome creators (New Museum's NEW INC and the Onassis Foundation launched the ONX Studio for two dozen artists and producers working in extended reality). Finally, a growing number of events and networks like MuseWeb, Museum Computer Network, MuseumNext, etc.

show that both museums and content producers are still looking for best ways and models of collaboration.

When it comes to strategic investment, HP provides occasional financial support to selected projects. **HP's focuses primarily on providing hardware to creators, software vendors and players in XR** to run their experiences on. "We don't have a platform, so we're not focused on funding content. Sometimes there are pieces that meet strategic needs of HP, so in some cases we have funded content. Example one, that has resonated with the healthcare team, was "History of Memory" that ended up winning the Tribeca X Award for Best Project. Another project we did was "How to Train Your Dragon: The Hidden World", with Dreamworks and Walmart (HP in a number one seller of computers in Walmart). In 2020 we funded "Finding Pandora X", which won Venice VR." explains Joanna Popper (HP). [36]

For the past five years, Epic Games has been running a long-term support program for independent developers known as **Epic MegaGrants** [37]. Grants range from $5,000 to

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[34] Source: Vive Arts

[35] Source: UniFrance, Foreign Sales of French VR content in 2018
[36] HP has also sponsored a number of HP Reverb headsets to Kaleidoscope Black Realities Grant winners in 2020.
[37] Source: Epic Mega Grants

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$500,000, and cover a variety of endeavors from game development, architecture projects, and film production to academic uses and software tool development. "COVID-19 really accelerated the appetite for our tools, we saw more interest and we ended up giving away more money. And there is also the de-risking aspect which is moving from old work to new work, moving to Unreal without taking the risk. So the purpose of the MegaGrant is also that. It's a grant, so there is no legal or contract, we trust you do with the money what you said you'd do. We try to focus on smaller projects making sure that our project happens in stages, everybody feels confident that the value is there, and that the money is properly invested." says Marc Petit. In 2020 the company has also established a system of additional support for developers: "We created a fellowship program, and we're allowing people who are out of job to get paid and retool and reskill using Unreal Engine. I think to this day we have retrained and funded 225 people, and there will be more before the end of the year [2020], another cohort of a 100." adds Petit.

Also in 2020, Unity has launched a new grant program within **Unity For Humanity** [38], that aims at supporting independent socially engaged creation that creates impact and promotes inclusivity. Amy Zimmerman who has been leading on the program since 2018 says: "The program was created to support what we now call change-making creators. It's an ever-evolving program that really addresses the needs of creators and adapts to what creators need in terms of funding, technical support and distribution needs. We support any type of content that is made with Unity, so that also includes games and tools. We run on a call for submissions basis. This year we are selecting 4 projects to partner with. We do that by offering non-repayable funding awards of $25,000 each."

Across the market there exists a number of smaller support programs like **VR Creators Lab**[39] by YouTube VR, which offers a 3-month VR training and a mini-grant of $20,000. In this specific case the focus is more on the training and developing new skills in creators who haven't been familiar with VR technology before. Sarah Steele, Content Partnerships Lead at YouTube VR, explained [40]:

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[38] Source: Unity for Humanity
[39] Source: VR Creator Lab
[40] FR//XR Industry Panel, "XR: A brighter future of media and entertainment?", New Images Festival 2020, Paris

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"Making VR content is just not easy and that's been a hurdle we had at YouTube, because most of the YouTubers, they are vloggers or they are doing this from their living room, and so, all of a sudden, if we are asking them to film in stereoscopic or edit in stereoscopic, or to interlace with 3D objects, it gets a little bit hard to scale that, and so we've been trying to figure out ways to support use cases quote that makes sense, but also just make it easier, and everyone across the industry has been trying to do that because it's still a hurdle to get more good VR content."

In terms of artist opportunities **platforms provide artist-in-residence programs, run labs and studios** that enable independent developers to experiment freely with the toolkit provided by the sponsor (ex. Snap/Lens Studio, Google/Tilt Brush, Facebook/Quill), extend their portfolio, skillset and marketing value. In December 2020 Snap announced a new fund of $3.5 million to support creators and developers who work in Lens Studio [42].

When it comes to independent creators René Pinnell, CEO and Designer of Kaleidoscope, shares a helpful recommendation: "Project funding is still in the hundreds of thousands more often, you have a couple of projects that can be north of a million. **Anything less than $50,000 is in the personal projects you can do with small grants and crowdfunding** - anything above it is where you need to put a lot more energy into packaging and pitching. If you're an individual who works on personal projects, it's better to focus on that work than on how you're going to fund it. If you have the skills to deliver the project, do Kickstarter or apply for a Kaleidoscope grant, do small, easy funding schemes that give you enough money to take time off from work or hire someone you need to help you with your project. Don't bother going after some of the more traditional larger funders if you don't have to, cause it takes a lot of time. If your project requires a lot of people, thus has a large budget, you have to take a different route. Unfortunately, you need to wear a lot of different hats."

OTHER FORMS OF PRODUCTION SUPPORT

Tech companies and platforms provide different kinds of support for creators and producers ranging from **hardware loans, access to free software, technological support, project consulting or mentoring, to marketing and outreach support**.

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[42] Source: Snap announces $3.5M fund directed toward AR Lens creation

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"For any given festival, we would typically have 3-5 experiences that used HP headsets, backpacks, laptops or workstations." says Joanna Popper (HP). "We would also support developers during their content creation phase. We are looking for people who are doing really interesting projects, use our hardware in new, innovative ways, we like to see that they have track records, and know that they will finish the project and get to festivals." **HP is present at a vast majority of international XR events**, whether it's conferences, markets or film festivals. Acclaimed projects supported by Joanna Popper's team include Kiira Benzing's "Loveseat" (Venice 2019), "Finding Pandora X" (Venice 2020).

Two biggest game engines and immersive software providers, Unreal Engine and Unity 3D, are offering their products mostly for free, often with valuable technological support from their highly skilled evangelists, developers and creative technologists. "**Our tools are free - really free, no strings attached**. You can get Unreal Engine and MegaScans for free, and that will not change." declares Marc Petit. "Second layer is you can learn online. We have free online learning platforms with a lot of courses so people can level up their skills. We have a network of partners as well, there is a whole ecosystem. And we still have a [stack] of Magic Leap One that we give, we still haven't given them all out." adds Petit.

"**Our biggest currency in Unity is our employee base**. We have 4000 employees with highly specialized skills who are very motivated to help art changing creators. All of that is to foster a community of social impact creators." says Amy Zimmerman. "We also connect selected creators with the Unity ecosystem - that can be funding, our partners and our employees. We take in projects that are in production, we offer mentorship and technical support, but also help the projects when they are ready for release. When they make it to market we bring it to our events, we showcase it at third party events, ex. we have a booth at Cannes Lions, we can offer marketing support, PR and press support as well, awareness campaigns are definitely part of it." explains Zimmerman, who has been in charge of the program since 2018 and noticed an exponential growth of the number of social impact creators within the XR ecosystem.

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When it comes to building momentum and positioning new content on the platform, often preceded by a handful of creative mentoring, Viveport/HTC Vive declares a wide spectrum of support. "Every creator is different. Some need more technical help, then that's what we give in addition to providing funding. Some need help on script or creative stuff." says Maria Rakusanova. "**We mainly help developers with marketing and monetization of their content**. It's harder for indie developers to stand out. If you take Steam, it's very hard to stand out. Oculus features AAA games, less so indies. Viveport is in between: we feature triple A games but 80-90 percent of what we curate is indie. We give feedback to creators. When they release their game or app we make sure it's as good as it could be." declares Rakusanova, who aside from leading the Viveport team, is also a curator and producer of the immersive program at Raindance Film Festival.

Teams working with expensive and demanding technologies like volumetric capture can look for in-kind support or collaboration opportunities with Microsoft Mixed Reality Capture Studio in San Francisco, CA - a mother studio to all Microsoft-powered volcap studios

in the world. "We capture 2D photographic data, make it three dimensional, and offer mechanisms for 6DoF playback known as volumetric or holographic video." explains Jason Waskey, Director of Microsoft Mixed Reality Capture Studio. "We work directly with clients on a retail level as well as license our capture/processing/playback stack to others. Our key investment is in cross platform (especially streamable via cloud) playback across XR solutions, whether that be HMD, AR/VR, webgl, mobile, console, etc. We also do work for hire capturing talent as work-for-hire, we produce proof of concept prototypes that stress our native, Unreal and Unity plugin playback capability, while also supporting the development efforts of our licensees and their clients."

The Microsoft MR Capture Studio team is open to welcoming artistic projects that can benefit from their world-class infrastructure and technological expertise. In 2020 at VIFF Immersed [43] the studio has founded two special awards to projects in development that include 2 days of shooting on location and post-production support worth over $80,000. It is worth mentioning that, after the closure of

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[43] Source: VIFF Immersed

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Intel Studios that co-produced a number of compelling, award-winning volumetric projects, the role of MRCS in developing independent spatial storytelling in the United States has become more important than ever.

DISTRIBUTION

In a virus-free reality content distribution is typically divided into two groups: out-of-home (OOH) experiences and at home experiences:

OOH: Location-Based Entertainment

Out of home experiences range from family-friendly entertainment centers, escape rooms, VR arcades to cultural and scientific institutions that offer immersive experiences to visitors, whether it's science centres, aquariums, museums, galleries or progressive digital art venues like the Artechouse. All these players felt a strong negative impact of the pandemic, and were forced to change their strategies almost overnight. Chloé Jarry, Producer at Lucid Realities ("The Enemy", "The Water Lily Obsession"), a studio that collaborates with museums on a regular basis, says: "We participated in 3 exhibitions that were cancelled: two were postponed and one was completely cancelled. One of the museums sold virtual tickets to present the artworks online - they provided ticket holders with a VIP access to a private 360 event. We continue the conversation with museums to assure them that we can deliver a VR exhibition without any sanitary risk as soon as the audience is back. **What we noticed is that more and more partners ask for AR rather than VR**." When it comes to the upcoming season Jarry notices: "2021 will be tough. The museums will have less money to invest after the lockdown. But the digital world enters museums and this is great. We have been waiting for that for many years. Today, both curators and audiences understand that we can do interesting things together in this field."

Even without the challenges of the pandemic immersive producers need to think as entrepreneurs to develop sustainable distribution models with the museum and gallery ecosystem. As Mike Jones (Senior Producer at Marshmallow Laser Feast) said: "Immersive distribution is like the Wild West. Everyone has to try and find the best way to distribute immersive artworks." [44]

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[44] In November and December 2020 French Immersion and Kaleidoscope partnered with We Are Museums, Museum Connections, Pixii and Fabbula to organize three online workshop sessions on immersive experiences in museums "The Lab: Making Sense of Immersion in 2021".

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Currently there exist two main models: one in which the museum and the production studio collaborate on the project, from which they share the revenue or the museum pays a fee to licence and present the experience. Another way is traditional content acquisition. What seems important is that there are no available funds to support distribution of location-based immersive content. These costs need to be covered by the museum or a sponsor. In many cases it means that producers must not only take care of the creation and delivery but also need to become entrepreneurs and develop sustainable distribution models for their portfolio.

Experts and industry members are constantly seeking new collaboration and business models to support the expansion of XR into museums and galleries. **A growing interest for interactive and immersive experiences is followed by a number of new venues** like the Museum of Future Experiences, Arcadia Earth, Artechouse, Superblue or Atelier des Lumières (new venue to be open in NYC). More and more venues are interested in exhibiting engaging interactive works.

This creates an opportunity for producers to reach out to different museum departments: curatorial, marketing, education, learning and digital, and pitch their ideas to them. Not all professionals from the cultural sector are familiar with new technologies, therefore it's good to identify the right people who can act as facilitators. XR experiences are innovative and experiential, so the best way to pitch is to organise a presentation and show a project demo. Producers and studios can also join networks and participate in museum events (MuseWeb, MCN, Museum Next). In terms of approach, a proactive strategy can be beneficial, especially when talking to institutions that have no prior experience with immersive media (pitch a business idea, explain major requirements and define what will be the distribution model). Last but not least, it's important to think about other public venues that can host your experience, like libraries, airports, malls or shopping centres (ex. "Spheres VR" was presented in the Rockefeller Centre, a large complex of commercial buildings in NYC).

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Having said that we must remember that with the pandemic taking its toll on LBEs [45], whether it's public institutions or commercial venues, online platforms become a major and only space for showcasing and selling new immersive content. In the United States "museums expect to lose an average of 35% of budgeted income this year, plus an additional 28% in 2021" [46], and many of the institutions feel at threat of shutting down in 2021 if they don't receive help. In commercial branches of location based entertainment the situation isn't any better. **Almost a 100% of arcades saw a negative impact of COVID-19**, while around 20% expected to close, according to a survey run by Springboard VR [47].

At Home Entertainment

With a rough number of around a dozen existing platforms that specialize in immersive content distribution, developers and studios are forced to plan their release strategies in a detailed and meticulous way trying to find as many homes for their projects as possible.

"LBEs were only 10 percent of our revenues. We focused more on publishing, we learned new things." says Antoine Cayrol, co-founder of Atlas V. "Publishing is very important and it's a main challenge for us. We publish on video games platforms but we don't do video games. Our main challenge is to find the right audience, make sales, and do great marketing on these platforms to reach the audience. We're trying to target a maximum of people, do the summer sales, winter sales, have a real strategy on how the pricing evolves."

Major VR gaming platforms, Steam, Oculus Store and Viveport, offer online distribution opportunities to immersive creators and independent developers. Whilst Steam as a gaming-first platform focuses less on narrative experiences, **Oculus Store and Viveport remain two main addresses for ambitious VR stories**. The proportion of immersive content on Viveport is approximately 80 percent games to 20 percent narrative experiences. Anyone can publish their work, as long as they fit the platform's technical requirements.

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[45] "The impact the virus has had on our behaviour in regards to crowd gatherings and health precautions has also led to many LBE VR companies shifting focus towards home VR entertainment or completely new business areas. "We went from a relatively healthy business to zero revenue", Sandbox VR CEO Steve Zhao said in June this year. "We have to rethink our strategy." LBE VR: Past, Present And Post Covid Future
[46] Source: "From bad to worse': over half of US museums have laid off or furloughed staff, survey shows
[47] Source: An Open Letter to LBE VR

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"We are a self-publishing platform. All you need to do is make a submission, we test it and it's published." explains Maria Rakusanova (Viveport). "**You can distribute for free or you can set up a price within any range**, or you can join our Infinity subscription program. Through this program you're making your content more accessible to consumers because all they need to do is pay 14.99 USD/EUR a month and within that subscription period they get access to a library of 1000 games and experiences. When someone buys the experience at full price, we keep 30 percent and 70 percent goes to the developer. It's an industry standard."

When it comes to non-gaming, narrative content, producers and studios can also target telecoms. Jimmy Cheng explains **how telecoms licence completed VR projects**: "Most of the telecoms are offering a flat fee, which means they will pay an X amount of money for the content. They licence it back for non-exclusive, only online, geoblocked, no-offline, no pay-per-view, no LBE use. In terms of what telecoms are looking for I would say series based on an engaging story, like "Gloomy Eyes" or "The Line". You watch a hero that grows up, and follow a love story. People adore these kinds of stories. Musical content also works very well, especially when you have a celebrity

to perform". Cheng also adds how VR distribution will change in 2021 when major European telecoms will enter the interactive market: "Telecoms do VR distribution because they want to leverage VR to do the showcase of 5G. Licencing 360 content is a transition period, which we understand 360 is powerful enough to attract users. More telecoms are thinking about 6DoF and interactive. Orange and Deutsche Telekom asked us to integrate their platforms into 6DoF, and they will apply it to one of the major available headsets. We are going to deliver early 2021, so Orange and Deutsche Telekom will start looking for 6DoF content. For North America, I'm sorry - T-Mobile and AT&T are not investing in licencing or distribution. RYOT invests in content, but doesn't do distribution. For Asian telecoms, 360 will still be their major focus. They need some time to grow and consider 6DoF, but they do have some licence for LBE usage."

Native VR platforms like AmazeVR or Little Star Media (Rad.live) specializing in premium experiences and immersive films, are also looking into a more holistic distribution model. Eric J. Krueger plans an offline expansion once the sanitary risks are out of the way: "We are continuing to explore other ways of distribution. The overall strategy is to become an all-in-one

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distributor so we can meet the needs of the creator. We have an online platform to reach people that way, and ideally we will have an offline platform where we can hopefully mirror traditional entertainment distribution, a theatrical release that moves on into streaming." declares Krueger.

EXPERT RECOMMENDATIONS

Whether you publish online, or plan to distribute offline, here's a list of recommendations on how to enrich your release strategy:

1. Try Extending Content

"Episodic is great for narrative experiences. If you can drop regular episodes, you can extend the lifetime of the experience. With each episode you can go to a festival and win awards." says Maria Rakusanova (Viveport). "There are some French studios who know very well how to do this".

2. Add In-App Features, Think Early Release

"When you have a platform that works like Netflix or Disney+ you can do in-app purchases, build on the experience and make it richer, same way that happens with games. You can get a DLC (downloadable content) and a new board, or ticket events like "The Tempest"" says Loren Hammonds (Tribeca).

"It will take time to see what works and what doesn't. It's like with premium VoD - will we pay more money to have an XR experience before it's available for a wide audience?"

3. Think Beyond Headset

"The magic really appears around our partners and their clients who are relying on the fastest and most economical way to deliver content. Right now that means mobile, webXR, etc. For clients, distribution strategy with webXR appears to be brand based (i.e. scan a QR code) versus downloading an app." explains Jason Waskey (Microsoft MRCS).

"What's important is to not tie the content to the delivery. You wanna use the same content both in a headset and in a wall with hundreds of projectors. The engine needs to make sure that the content is at its best on each device." declares Marc Petit.

4. Re-Use Your Assets

"t's time to re-invent the pipeline. Today you cannot fund a transmedia production. Funding for interactive experiences, TV series and games is completely different. Nobody is going to buy a package, everyone says: give me the game, or the TV series, or a VR experience. But we will get there." Marc Petit (Unreal Engine) is confident.

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Expansion to the U.S. Market: Practical Recommendations

The difference between running a project or a company on a territory that offers no public support goes far beyond money. It forces managers and producers to approach financing with a much more flexible and open-minded spirit, and make every partnership count in the long-term perspective. It's also about being truly audience-oriented, as the revenue and actual sales numbers can impact your future projects and collaborations. Making sure your project stands out and is widely distributed is paramount, whereas finding the right partners and becoming a needed and valuable ally for your potential sponsor comes as a fundament of a successful financing strategy.

What are our experts' recommendations and advice on having a fruitful collaboration with American partners?

1. Find an ally who will help to take your project off the ground, and position it on the market

As obvious as it sounds, it's good to remember that networking is king, and you should make sure to get the right people to know you. Connect with decision makers and leaders, whether they are festival programmers,

business executives or technologists. You should embrace a socially engaged model that includes being a member of professional networks, applying to markets, festivals and awards (Tribeca, Sundance, Cinequest, Filmgate, MIT AR/VR Hackathon, Emmy Awards...), securing speaking opportunities, and actively participating in the life of your community. [48]

To start a collaboration, you need first to learn what your future partner is looking for and what their expectations are . "What we're looking for is, first and foremost, quality." Maria Rakusanova (Viveport) puts a strong emphasis on the overall experience polish. "How do you feel in the environment? How easy is it to understand that I need to open a door? Are the interactions easy to do? There's also visual and sound polish. You don't want your experience to look or feel like 2017. The combination of gameplay, narrative, visual and audio polish is key. And then how do these elements click together?"

Another thing to keep in mind is that your financing partner is also your co-producer, and as such will have a real impact on your project and a responsibility to make it have a long and

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[48] See: Appendix, Key XR players in the USA

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successful life. Some of the partnerships might become long term collaborations, or even start an alliance. [49]

2. Make sure you have a plan how to use even a minimal contribution

Creating your budget with numerous investments from different sources is something that demands time and clear strategic goals. It's a long way to go, and most importantly every collaboration you start is a beginning of a longer relationship. Joanna Popper explains the meaningfulness of HP's contribution as a sponsor: "I was able to give Kiira [Benzing, director of "Finding Pandora X" - Venice VR 2020 Winner] only a small amount of money but it was significant to her. We also gave her the tech for all of the actors. When a team comes and says: we have a 3 million dollar project, does it even make sense to give them a small amount of money? For Kiira our contribution was huge but for somebody else that contribution would not be meaningful."

3. Invest in the richness and quality of your offer, optimise your production model

Leaders mentioned that the market is open for new types of content, both in terms of format and user experience. Reaching beyond standards can be risky, but can also bring benefits that come with leading on something no one has done before. "A good deal of adoption will pave the way to longer form work which is going to be key to sustaining creators, and this is what platforms will be looking for." predicts Loren Hammonds (Tribeca). "More in-app purchases, and experiences that can be built on, spaces that create a community, where you can work and experience with other people."

Colum Slevin (Facebook VR/AR Reality Labs) [50] makes it clear that narrative creators should be cautious of their audience's expectations: "Sometimes when people say gamers they almost mean people who are willing to pay for content on digital platforms. But gamers, if they are willing to pay for content, they have high standards and high expectations in terms of the entertainment value they get. I think that's the gap that narrative VR has to really bridge."

On the other hand, Eric J. Krueger (AmazeVR) is certain that creating content routines is important both from the viewer's and the

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[49] Such as the Global XR Content Telco Alliance. The Alliance became a co-financing partner of a 360° International Space Station mobile experience produced by Felix & Paul Studios.

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producer's perspective: "We need to look into solutions where the costs are lower because the experience is more templatized, and get users excited about recurring events, or recurring content that they understand. Social gatherings, content engagement and familiarity is key. It has to feel like something users have done before, adding the VR magic on top of it."

4. Stand by for business model changes

Creating innovative content with innovative tools can and will eventually lead to a new production pipeline and business model. Marc Petit from Unreal Engine thinks that commissioners and buyers will soon need to learn to spend their money differently in order to receive more content within a single project budget: "We use real time animated characters on TV shows. Those assets are a source of a lot of content! People need to go beyond a single platform syndrome." says Petit who is a strong advocate of reusing elements created in a 3D environment. "Often it doesn't make sense to create a production for a single platform, because there's not enough Quests, or not enough PSVRs. But when you create an experience that can be consumed across all

devices, suddenly it makes sense. Funding is more difficult, because some people have a bias towards certain platforms (ex. interactive, location-based, VR headset). Current technology can handle that, and so we need to put this into our business practice." concludes Petit.

One of the potential results, as Maria Rakusanova (Viveport) has put it, could be a new type of virtual storytelling: "What I would like to see more is the gaming and film industry coming together. Creating new genres that can only be achieved in VR. The best could happen, especially in France, if the two collide together and create something genre-defining, beautiful and meaningful. These experiences will talk to hardcore gamers, casual gamers and even non-gamers."

This recommendation sounds particularly important in the context of slow VR adoption among individual consumers. A strategic reuse of assets, content and IP within multiple platforms, whether it's gaming, television, music or AR, could become a great source of revenue and a visibility booster for the producer.

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[50] FR//XR Industry Panel, "XR: A brighter future of media and entertainment?", New Images Festival 2020, Paris

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5. Know your strengths

What could have a positive impact on your strategy is knowing how to best use your strengths and atouts. Collaborating with French studios and producers comes with a range of benefits, from tax incentives to attractive public support opportunities, great storytelling and creative competences, and a big well-educated local audience with interest in culture, education and social impact. The Tax Rebate for International Productions goes up to 30% (or 40%, if the French VFX expenses are more than €2M) of the qualifying expenditures incurred in France, and can reach a maximum of €30 million per project. Being aware of how to best play your cards can make you a great partner for companies and organizations that understand and value a smart cross-continental collaboration.

6. 3Ps: Passion, Perseverance and Purpose

"We're on a steady climb on a real industry. Companies are running actual businesses as opposed to just being venture-backed and speculative. It doesn't have the euphoria of 2014 to 2017 but it seems like it's built on real

fundamentals now." says René Pinnell, CEO and Designer of Kaleidoscope, Executive Producer on "Spheres VR" and "Battlescar". "How to succeed in XR production? With passion, perseverance, and purpose. The three Ps that are important to get you through the fundraising process. You should start with perseverance - it's going to take a long time, you should expect it to take up to 12 months, sometimes longer. You need to have passion for the work that you're producing to keep shoving the boulder up the mountain. You really need to love the project. If a project doesn't light a fire in your belly, you probably won't have enough passion to persevere. And you need to have a purpose behind the work. It needs to have an impact you care about. Almost everybody these days wants to fund work that will not only reach an audience and make some money but also will have a positive impact." adds Pinnell.

[51] Source: The Tax Rebate for International Productions

Conclusions

The Future of XR

The overall message from industry leaders is that despite an unstable and turbulent time we are looking forward to **a quicker and wider XR adoption**, and a more diverse market with a large number of new business opportunities. There is **a growing need for new types of content**, both in terms of formats and genres, as well as devices and platforms used. **Event-based content, live or real-time** components, as well as easily-accessible AR experiences are mentioned as something to look up to. In terms of production strategy **a multiplatform-oriented model** and a more templatized pipeline are recommended. A quicker adoption could be stimulated by non-gaming industries (B2B, B2C) as leaders expect a great deal of **new investments within education, training, healthcare and enterprise**. In the field of entertainment and culture, a more **social approach** is in demand (social XR, multiplayer experiences).

THE SINE QUA NON OF VR ADOPTION?

When asked about what is needed for immersive media to continue to grow and become mainstream, industry leaders pointed out that mass adoption of VR depends on many factors: technology, content and use cases.

Depending on the point of view, opinions on why the adoption is not as dynamic as we'd expect it to be, or how it could accelerate, differ.

1. Less Hardware, More Bandwidth

"We don't see a lot of XR in the consumer space except from the domain of Sony, that has sold 5 million headsets, which is a significant number." notices Marc Petit (Unreal Engine). "Through COVID-19 we have seen a lot of people doing VR scouting from home, and using the multi-user capabilities of user equipment, where some people can be in VR, others can be on desktop, and they all work together with a workflow orchestrated with the cloud. That's going to become very natural. Now the problem is that the headset is clunky and uncomfortable. Give us less wires, and more streaming!

2. Content Still Is King

"We've been pushing the really artsy and technical side of things, but how do you get mainstream adoption of VR? That's going through things that people are actually closer to or used to. I think education, which is something that I'm a huge fan of. We did a lot of projects with National Geographic, and these

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pieces are very relevant." says Sarah Steele (YouTube VR) [52].

3. Everyday Use

"Prior to this situation, people were viewing VR headsets as gaming platforms. People finally understood that it's not only a gaming tool, it's something you can use in your everyday life. That it is a technology similar to your phone. You can use it for enterprise, entertainment, playing games on it, and all of it works." explains Eric J. Krueger (AmazeVR).

THE FUTURE OF XR

Whether we consider a long- or short-term perspective, leaders foresee a number of changes that will make XR not only richer and more socially engaging, but also omnipresent in different areas, from entertainment to business.

Social and community-building aspects of virtual reality are paramount. To Maria Rakusanova (Viveport), "the future is definitely in multiplayer experiences. Single player experiences will for sure exist, but making experiences social where people feel they are on a joint mission and do things together is crucial." Eric J. Krueger (Amaze VR) adds that "finding a way to connect users either around

content or around a virtual event fills a huge need for a number of people for a number of reasons. I think we will see more event-based content where people log in together, and experience it together."

Finally, **social experiences can come from the encounter in between VR and performing arts** as Loren Hammonds (Tribeca) explains: "The idea of incorporating live performances into VR is something that people are very interested in, which is partially related with the fact that we can't gather in theatres."

Virtual events and VR can also become a **solution for players who want to minimise their carbon footprint**. Amy Zimmerman (Unity) is confident. "At the Unity For Humanity Summit we used Unity to host our keynote, and we were able to reach 12,000 people across the globe, so it's not only about building connection but also about a positive environmental impact."

Aside from hosting virtual events, concerts, performances or fashion shows the industry saw an opportunity of connecting people through experiences that are more than just a social gathering: "Alex MacDowell and Experimental Design are working with the American Society of Civil Engineers on world

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[52] FR//XR Industry Panel, "XR: A brighter future of media and entertainment?", New Images Festival 2020, Paris

Conclusions

The Future of XR

building. In real time 3D they create elaborate worlds where they train engineers to build more sustainable cities. Schools and engineers are able to train in virtual worlds and make decisions, create new more sustainable designs that will work for large populations for example in case of sea levels rise. You can't compete with that type of real time 3D learning and bringing together people from all over the world." concludes Amy Zimmerman (Unity).

2. Virtual and augmented reality will become a part of our everyday lives

For most of the experts, XR will become part of our lives, as other technologies we are now familiar with. Eric J. Krueger (AmazeVR) explains that "people finally understood that [VR headset] is not only a gaming tool, it's something you can use in your everyday life. That it is a technology similar to your phone. You can use it for enterprise, entertainment, playing games on it, and all of it works."

Marc Petit (Unreal Engine) notices: "We don't see a lot of XR in the consumer space except from the domain of Sony, that has sold 5 million headsets, which is a significant number. Through COVID-19 we have seen a lot of people doing VR scouting from home, and using the multi-user capabilities of user equipment, where some people can be in VR, others can be

on desktop, and they all work together with a workflow orchestrated with the cloud. That's going to become very natural. Now the problem is that the headset is clunky and uncomfortable. Give us less wires, and more streaming!" He adds: "I think the XR market will disappear. "When we finally get the network infrastructure, and we can choose stuff that is rendered locally or have a hybrid solution: you do some of the work on the headset and some of the work on the cloud, then it works hand in hand. Once we have that and a good hardware, there will be no XR industry anymore. XR will be everywhere."

Jason Waskey (Microsoft MRCS) concludes: "As the years progress and the hardware supports a proper mixed reality experience, XR will revolutionize human computer interaction (HCI) at the same level of antiseptics, refrigeration, the mobile phone, the Internet, and every other similar major human technological advancement. I suspect that by 2035, the time we are in now will feel as distant from an HCI standpoint as 1995 feels from today."

Appendix

Key XR Players in the USA

The Cultural Services of the French Embassy in the United States worked to identify the main actors of immersion (XR) in the country. This map presents more than a hundred actors, divided into seven categories:

1. Exhibition venues and arcades
2. Universities and training actors
3. Studios
4. Events
5. High-tech companies
6. NGOs and public bodies
7. Incubators

→ Click here for the full map

To access the source table that lists different actors by territories, please click here.

If you are a US-based XR professional and you would like your organization to be a part of this list or if you have any questions, please contact: emma.buttin@frenchculture.org

FR//XR Project Team

Ana Brzezińska

Ana Brzezińska is a Curator and Producer at Kaleidoscope. Partnering with Museum of Other Realities, Kaleidoscope has been on the bleeding edge of virtual event production, co-creating a number of immersive gatherings including the biggest VR exhibition in virtual reality at Cannes XR/Marché du Film, and a first virtual fashion show with RYOT/Verizon Media. Ana has been collaborating as a VR and film expert with funds (Creative Europe MEDIA, PFI – Polish Film Institute), academia, NGOs and public institutions (Polish National Opera). She was a research fellow at Centrum Cyfrowe where she worked on a study on ethical risks of XR. From 2012 to 2018 she was a director and producer at TVN Discovery Group. Ana's film and VR projects have been presented and awarded at Hot Docs Forum, Venice Production Bridge, Cross Video Days, and acquired by Canal+ and Polish National Television.

René Pinnell

René Pinnell is the CEO & designer of Kaleidoscope, an immersive production studio playing a central role in the artistic renaissance of virtual reality, and a community fund for artists. Kaleidoscope has helped creators raise more than $34MM for original projects including the first seven-figure deal for a VR film at Sundance. As an executive producer, René Pinnell has worked on some of the industry's most groundbreaking work including the animated VR film BATTLESCAR, starring Rosario Dawson, and the VR series SPHERES, starring Jessica Chastain, Millie Bobby Brown, and Patti Smith. As a filmmaker & designer, René produced the acclaimed comedy show "Backpack Picnic", directed the feature documentary "The King of Texas", sold a TV pilot to MTV, designed five products and founded two companies.

FR//XR Project Team Continued

Emma Buttin

Emma Buttin is an Officer for New Media at the Cultural Services of the French Embassy in the United States. A graduate from Institute of Political Science of Grenoble and ESCP Europe Paris in management of cultural activities, Emma Buttin is passionate about projects at the crossroads between culture, technology and society. She worked for cultural organizations in France and abroad, such as the Observatory of Cultural Policies, the French Committee for Sustainable Development, the MC2 - cultural center for performing arts and the City of Montreal, before joining ARTER production agency (arter.net). As a project leader, she developed innovative public art programs such as the cultural project of the Greater Paris Transportation Network. She was the head of the residency program at La Gaîté Lyrique, a digital art center in Paris, (gaite-lyrique.net) and helped curators, studios and artists on their projects. She was also part of the team of the festival New Images in Paris, dedicated to immersive experiences. She joined the French Embassy in 2019 to promote French and American cooperation through the programs French Immersion on XR, the Créative Lab North America for cultural entrepreneurs and Games for Good to build a more inclusive gaming industry. She is a mentor at New Inc. (New Museum) and a founding advisor of Oasis Consortium.

Valerie Mouroux

Valérie Mouroux serves as the Director of Film, TV and New Media Department at the French Embassy in the United States. In this position, she oversees the promotion of French Media and Entertainment Industries in the U.S., including cinema, TV series, video games and VR. She is also charged with enhancing collaborations with American professionals, cultural institutions and stakeholders. Before moving to NYC, she was Director of Cinema and then Director of Development and Partnerships at the Institut français (Paris). Her professional experience includes more than twenty years dedicated to fostering cross-cultural dialogue through cinema. She notably created a program for emergent filmmakers in Cannes (Fabrique des Cinémas du Monde), developed an EU funded scheme for film literacy (CINED), co-managed several film funds, including Aide aux cinémas du monde for international co-productions, and run a non-profit for African cinema. As part of her activities of promotion of French cinema, she distributed internationally programs and retrospectives (O.Assayas, C.Denis, B.Jacquot, A.Varda, A. Gitai, R.Peck, R.Depardon, J.Demy, J. Tati). She was a board member of the Cinémathèque Française, the FEMIS cinema school and a teacher at Ecole Nationale Supérieure Louis Lumière. She graduated from the Ecole Normale Supérieure (Fontenay) in Littérature.

FR//XR Project Organizations

Kaleidoscope

Kaleidoscope is an immersive production studio playing a central role in the artistic renaissance of virtual reality. Partnering with Museum of Other Realities, Kaleidoscope has been on the bleeding edge of virtual event production, co-creating a number of immersive gatherings including the biggest VR exhibition in virtual reality at Cannes XR/Marché du Film, and a first virtual fashion show with RYOT/Verizon Media. Kaleidoscope has also helped creators raise more than $34MM for original projects including the first seven-figure deal for a VR film at Sundance.

The Cultural Services of the French Embassy in the United States

The Cultural Services of the French Embassy in the United States promotes the best of French arts, literature, cinema, digital innovation, language, and higher education across the US. Based in New York City, Washington D.C., and eight other cities across the country, the Cultural Services brings artists, authors, intellectuals, and innovators to cities nationwide. It also builds partnerships between French and American artists, institutions, and universities on both sides of the Atlantic.

Face Foundation

FACE Foundation is a nonprofit organization dedicated to supporting French-American relations through innovative cultural and educational projects. With additional corporate, foundation, and individual support, FACE administers grant programs in the performing and visual arts, cinema, translation, and secondary and higher education, while providing financial sponsorship to French-American festival and other cultural initiatives.

CNC

Created in 1946, the Centre national du cinéma et de l'image animée (CNC) is a public administrative organization, set up as a separate and financially independent entity which comes under the authority of the French ministry of culture and communication. Its principal missions are regulatory: support for the film, broadcast, video, video games, immersive productions and technical industries; promotion of film and television for distribution to all audiences and preservation and development of the film heritage.

FR//XR Project Organizations Continued

UniFrance

For more than 70 years, UniFrance has been using its experience of the international marketplace to support French cinema worldwide. UniFrance is based in Paris and also has representatives from New York, Beijing and Southeast Asia. Its membership brings together around 1,000 French producers, filmmaking talents, agents and sales companies, which are working together to promote French film among foreign audiences, industry executives and media. UniFrance supports, as long as feature and short films, the international promotion of immersive projects and creators throughout the world.

Institut français

The Institut français is a public institution under the aegis of the French Ministry for Europe and Foreign Affairs and of the Ministry of Culture responsible for French cultural actions abroad. Its initiatives cover various artistic fields, intellectual exchanges, cultural and social innovation, and linguistic cooperation. Throughout the world, it promotes the French language, as well as the mobility of artworks, artists and ideas, and thus works to foster cultural understanding.

FR//XR Events and Guests

Between April and December 2020 we co-hosted 7 online events where we spoke with more than 25 XR professionals about the ongoing changes induced by the pandemic and a prolonged lockdown in Europe and North America. To organize the sessions, we have been supported by partnering organizations like Cannes XR/Marché du Film, New Images Festival / Forum des Images and We Are Museums.

LBE in the post-COVID world. Disruption and opportunities.

at Cannes XR with Agnès Alfandari (Director of Digital, Institut français), David Askaryan (CEO, Museum of Future Experiences), Elisha Karmitz (CEO, mk2), Joanna Popper (Global Head of Virtual Reality for Location Based Entertainment, HP). Hosted by Emma Buttin (New Media Officer - French Embassy in the U.S.).

Festivals and markets facing a new reality. Pandemic challenges meet solutions.

at Cannes XR with Zeina Abi Assy (Director, Interactive Programs at Tribeca Film Institute), Elie Levasseur (XR Programme Leader, Cannes XR), Blake Kammerdiner (VR Programmer, SXSW), Michel Reilhac (Programmer of Venice VR and Head of Studies for Venice Biennale College Cinema and Cinema VR). Hosted by René Pinnell (CEO & Founder - Kaleidoscope).

XR: a brighter future of media and entertainment?

at New Images with Deborah Papiernik (SVP New Business & Strategic Alliances, Ubisoft), Colum Slevin (Director of AR/VR Media, Facebook-Oculus), Ethan Stearns (VP of Content, Madison Wells Media Interactive), Sarah Steele (Content Partnerships Lead, YouTube VR). Hosted by Axel Scoffier (Deputy Director General, UniFrance).

Independent creation in times of COVID-19. The impact of pandemic on XR artists

at New Images with Olivier Fontenay (Head of the Digital Creation Department, CNC), Amaury La Burthe (CEO & Creative Director, Novelab), Anja Moreno-Smith (Chief Operations Officer, Potential Synergy), Bracey Smith (Founder and XR Creative Developer, Potential Synergy). Hosted by Ana Brzezińska (Curator and Producer, Kaleidoscope).

FR//XR Events and Guests Continued

The Lab: Making Sense of Immersion in Museums

organized by We Are Museums, in collaboration with Museum Connections, Pixii Festival, Kaleidoscope and Fabbula. Hosted by Darragh Dandurand, creative director, exhibition curator and independent journalist.

How to Foster Collaborations Between Immersive Creatives and Cultural Spaces?

With Chloé Jarry (Co-founder, Lucid Realities), Christiane Paul (Adjunct Curator of Digital Art at the Whitney Museum of American Art, Chief Curator/ Director of the Sheila C. Johnson Design Center and Professor in the School of Media Studies at The New School).

Immersion for Culture Institutions: Which Technology for Which Need?

With Camille Lopato (Co-founder, Diversion Cinema), Sandro Kereselidze (Founder and Art Director, Artechouse).
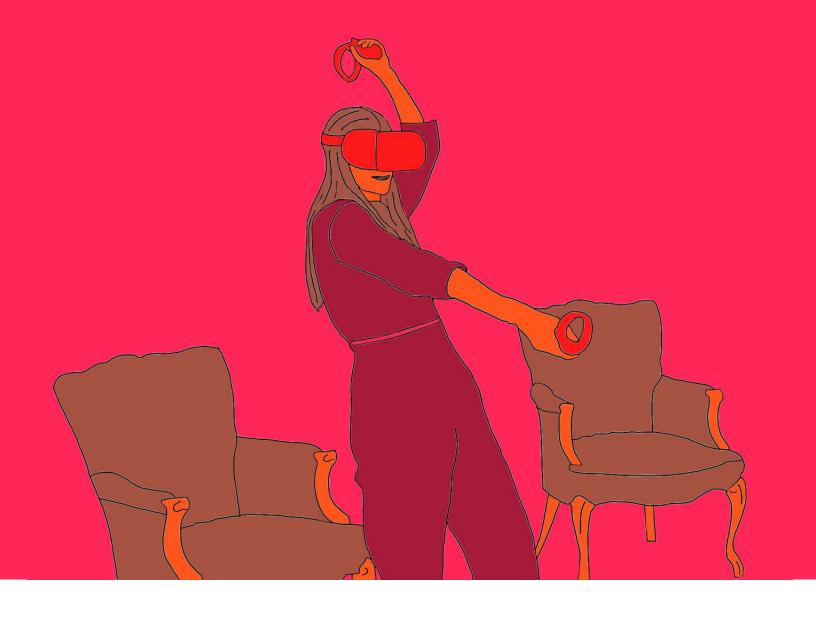
How to Distribute Immersive Artworks in a Museum?

With Mike Jones (Senior Producer, Marshmallow Laser Feast), Myriam Achard (Director of Public Relations and Communications, Centre Phi and DHC/ART Fondation for Contemporary Art), Hannah Bellicha (Digital Project Manager, Institut Français).

French Immersion and Kaleidoscope present

FR//XR
A Handbook For Immersive Producers

How to successfully finance, produce and distribute immersive content

FRENCH IMMERSION

CULTURAL SERVICES
FRENCH EMBASSY
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CNC

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